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(54) Material for use in footwear

(57) A material suitable for use as an upper in footwear comprises a plastics material layer provided with a plastics material fleece on its rear surface, the overall thickness of the material being at least 2.0 mm, the thickness of the plastics material fleece being at least 75% of the overall thickness of the material and the fleece being felted mechanically and/or thermally without the use of bonding agents and then being solidified or set.

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SPECIFICATION**A material suitable for use in footwear**

5 The present invention relates to a material suitable for use in footwear. More particularly the material is chiefly intended to be used to form the unlined upper of a shoe made of synthetic leather.

10 In lined shoes made of synthetic leather, the properties of the upper are, effectively, the sum of the properties of the constituent materials. In substantially unlined shoes, the synthetic leather upper alone must have the necessary properties. Examples of such properties are tear-resistance, thickness,

15 impermeability to moisture and shape-retention. Furthermore, it is necessary, in such an unlined shoe upper, for the synthetic leather surface which, in use is adjacent the foot of the wearer to satisfy hygiene requirements and it is desirable that it has the

20 appearance of natural leather.

It is known for unlined shoe uppers to be produced from synthetic leather materials with a woven or knitted carrier or backing. Since the backing used hitherto for synthetic leather is generally thin, it is

25 necessary for the requisite overall thickness of the upper to be achieved by making the synthetic plastics material comparatively thick. A particularly serious disadvantage of such a known upper is that the thickness of the plastics material tends to counteract

30 the expansion forces set up when the shoe is being worn with resilience forces. The shoe does not, therefore, give or mould itself to the shape of the foot of the wearer. This, as will be appreciated, gives rise to discomfort and may cause minor foot ailments.

35 In addition, the dampness absorption and moisture permeability characteristics of such synthetic leathers are generally unsatisfactory.

It is also known to use thin synthetic leathers, which comprises thin polymeric material coatings

40 formed on relatively thin textile carriers, such as fabrics, woven materials or fleeces, to manufacture shoe uppers. Since these types of synthetic leather are too thin and weak for use on their own and, moreover, have a rear surface which is not aesthetically pleasing, they are usually coated with other materials, such as split fleeces or textiles before being processed to form shoe uppers. Coating can, indeed, provide the thickness and strength of natural leather, and can be used for unlined shoes but at the

45 expense of reduced flexibility. Moreover providing such coating is costly, and there is always the possibility that the individual layers may separate from one another due to the constant bending thereof whilst the shoes are being worn.

50 It is also known to use so-called poromeric synthetic leathers which are produced by a calulation method and which have a carrier or backing which is hardened by the use of bonding agents. These synthetic leathers, when made specifically for

55 unlined shoes, conform to the necessary requirements of thickness and hygiene. However, they are costly and shoe uppers made therefrom tend to collapse. This is because restoration forces or resilience inherent in the bonding agents and coatings used

60 mean that the deformations caused during the shoe

manufacture or when the shoe is being worn may not be permanent and the synthetic material will attempt to resume its original shape once the deformation forces are removed. To minimize this effect, an additional thermal fixing stage is required during the manufacture of the shoe.

The present invention seeks to provide a material which can be used for making shoe uppers of synthetic leather which does not suffer from the aforementioned disadvantages. The invention therefore seeks to provide a material which has a layered structure which is as simple as possible and has sufficient overall strength. The material should have no pronounced stretch properties and should have the appearance of natural leather both on its inner and outer surface and when cut. Finally, the material should be easy to process, have good hygiene properties and should be economically viable.

According to the present invention, there is provided a material suitable for use in footwear as the material of the upper comprising a plastics material layer provided with a plastics material fleece on its rear surface, the overall thickness of the synthetic leather being at least 2.0 mm, the thickness of the plastics material fleece being at least 75% of the overall thickness of the synthetic leather and the fleece being felted mechanically and/or thermally without the use of bonding agents and then being solidified or set. Utilising an overall thickness of the synthetic leather of at least 2.00 mm, of which at least 75% is the fleece, the fleece can be felted and hardened utilising mechanical and/or thermal means. By so doing, the undesirable use of bonding agents is avoided.

The relative thickness of the fleece compared with that of the plastics material coating and the absence of the bonding agent prevents any substantial deformation-restoring forces from occurring. This is apparently because the absence of bonding agent permits fibres of the fleece to be freely displaceable relative to one another and to remain in the spatial arrangement produced by deformation of the synthetic leather, without triggering off restoration forces. Moreover, the fleece can also absorb the weak restoration forces of the thin, soft plastics material coating. Accordingly when used in a shoe upper, the material adapts itself to the foot of the wearer.

The fleece is desirably formed of polyester and/or polyamide fibres which are preferably colour-matched to the colour of the plastics material coating. On the reverse side, that is to say the surface adjacent the foot of a wearer when the material is utilised to form the upper of a shoe, a print is made to simulate the flesh side of natural leather. The plastics material coating is preferably formed from a calendered foil of elastomeric polyvinyl chloride which is coated onto the fleece.

The fleece itself is capable of absorbing moisture between the interstices of the fibres. In combination with micropores, which may be formed mechanically in a known manner in the coating, this results in a high degree of air and water vapour permeability and hence, when the material is used for making shoe uppers, the shoe has good wearing properties.

An additional advantage of the material in accord-

dance with the invention lies in the pronounced pressure elasticity of the synthetic leather in the direction normal to the surface. The material may be compressed with little force and, upon relief of the pressure, returns to its original shape almost spontaneously. This has a positive effect not only during wearing, but also during processing, for example, when injection-moulding or foam-moulding shoe soles.

5 10 As is possible in unlined shoes made of natural leather, the material of the present invention can be used to form a partial lining especially in the heel region, for concealing a machined-in heel closure portion.

15 CLAIMS

1. A material suitable for use in footwear as the material of the upper comprising a plastics material layer provided with a plastics material fleece on its rear surface, the overall thickness of the synthetic 20 leather being at least 2.0 mm, the thickness of the plastics material fleece being at least 75% of the overall thickness of the synthetic leather and the fleece being felted mechanically and/or thermally without the use of bonding agents and then being 25 solidified or set.

2. A material as claimed in claim 1, wherein the fleece is formed from polyester fibres.

3. A material as claimed in claim 1 or 2, wherein the plastics material layer comprises an elastomeric 30 polyvinyl chloride calendered foil affixed or coated onto the fleece.

35 4. A material as claimed in any one of claims 1 to 3, characterised by the feature that the synthetic leather additionally has micropores formed therein, which micropores are produced by needling and/or electrically.

40 5. A material as claimed in any one of claims 1 to 4, wherein the fleece is the same colour throughout and is the same colour as the plastics material layer.

45 6. A material as claimed in any one of claims 1 to 5 wherein the exposed rear surface is provided with a printed design simulating the flesh side of natural leather.

7. A material for use in footwear substantially as 45 hereinbefore described.

8. A shoe when made, at least in part, from a material as claimed in any one of claims 1 to 7.

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